

WHAT WE CLAIM IS:

1. A cellular mobile communications network including:

a base station controller;

5 an array of base transceiver stations, each having a communications path connecting it to said base station controller, such that when an uplink signal is received from a mobile station of the network by a plurality of the base transceiver stations of said
10 array, each base transceiver station of said plurality can transfer the received uplink signal via its said communications path to said base station controller;

a communications path assessment unit which assesses said communications paths according to one or
15 more predetermined characteristics; and

a communications path disabling unit operable, based on the assessment of the communications paths, to prevent at least one base transceiver station of said plurality from transferring the received uplink signal
20 to said base station controller means.

2. A network as claimed in claim 1, wherein said communications path assessment unit is included in said base station controller.

3. A network as claimed in claim 1, wherein said
25 communications path assessment unit is included in each of said base transceiver stations of said plurality.

4. A network as claimed in claim 1, wherein each base transceiver station of said plurality has such a communications path disabling unit and the disabling
30 units cooperate to prevent at least one base transceiver station of said plurality from transferring the received uplink signal to said base station controller.

5. A network as claimed in claim 1, wherein said
35 communications path assessment unit is included in said base station controller and in at least one of said

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base transceiver stations of said plurality.

6. A network as claimed in claim 4, wherein said communications path assessment unit is operable to determine an order of ranking of the assessed communications paths according to said one or more predetermined characteristics and to inform the communications path disabling unit in each base transceiver station of said plurality of the rank, in the determined ranking order, of said communications path connecting that base transceiver station to the base station controller.

7. A network as claimed in claim 1, further including:

a received uplink signal assessment unit for assessing the received uplink signal of at least one of the base transceiver stations of said plurality;

said communications path disabling unit being operable to employ both the communications-path assessment and the uplink-signal assessment in determining whether or not to prevent at least one base transceiver station of said plurality from transferring the received uplink signal to said base station controller.

8. A network as claimed in claim 7, wherein each base transceiver station of said plurality has such a received uplink signal assessment unit, and said mobile station is operable to provide the received uplink signal assessment unit in each base transceiver station of said plurality with a measure of the uplink channel performance of each other base transceiver station of said plurality.

9. A network as claimed in claim 1, wherein at least one base transceiver station of said plurality has two or more communications paths available for connecting it to the base station controller, and the network further includes an available path selection unit

operable, when said communications path disabling unit determines that said transfer between its base transceiver station and the base station controller is to be made, to select one of said available communications paths.

10. A network as claimed in claim 9, wherein said communications path assessment unit is operable to assess each of said available communications paths, and said available path selection unit makes the selection from amongst said available communications paths based on said assessment of those paths by said communications path assessment unit.

11. A network as claimed in claim 9, wherein said available path selection unit makes the selection from amongst said available communications paths based on an assessment of the signal to be transferred between the base transceiver station and the base station controller.

12. A network as claimed in claim 11, wherein said available path selection unit makes said selection based on a traffic type of the signal to be transferred.

13. A network as claimed claim 1, wherein said communications path assessment unit is operable to examine signals propagating through said communications paths and to employ the results of the examination to assess at least one of said predetermined characteristics of said communications paths.

14. A network as claimed in claim 1, wherein said communications path assessment unit is operable to receive control signals generated by a communications path controller serving to monitor said communications paths, which control signals represent one or more measures of the performance of those communications paths, and are also operable to employ the received control signals to assess at least one of said

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predetermined characteristics of said communications paths.

15. A network as claimed in claim 1, further including:

5 a mobile switching centre connected to said base station controller and operable to apply to the base station controller control signals representing one or more measures of the performance of said communications paths, said communications path assessment unit being
10 operable to employ the received control signals to assess at least one of said predetermined characteristics of said communications paths.

16. A network as claimed in claim 1, wherein said communications path assessment unit includes a storage
15 device for storing one or more measures of the performance of each of said communications paths.

17. A network as claimed in claim 1, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft
20 hand-off operation with said mobile station.

18. A network as claimed in claim 1, wherein said one or more predetermined characteristics include one or more of the following characteristics:

25 congestion, availability, quality and cost of the communications paths.

19. A base station controller, for use in a cellular mobile communications network that includes an array of base transceiver stations, each having a communications path connecting it to the base station controller such
30 that, when an uplink signal is received from a mobile station of the network by a plurality of the base transceiver stations of the array, each of those base transceiver stations can transfer the received uplink signal via its said communications path to the base
35 station controller, which base station controller includes:

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a communications path assessment unit which assesses said communications paths according to one or more predetermined characteristics; and

an informing unit which generates assessment signals indicating the results of the assessment of said communications paths and which transmits such assessment signals to the base transceiver stations of said plurality.

20. A base station controller as claimed in claim 19, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

21. A base station controller as claimed in claim 19, wherein said one or more predetermined characteristics include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

22. A base transceiver station, for use in a cellular mobile communications network in which an array of base transceiver stations including the claimed base transceiver station are connected to a base station controller of the network by respective communications paths such that when an uplink signal is received from a mobile station by a plurality of the base transceiver stations of the array, each of those base transceiver stations can transfer the received uplink signal via its said communications path to said base station controller;

the claimed base transceiver station including:

a communications path disabling unit operable, based on an assessment of said communications paths according to one or more predetermined characteristics thereof, to prevent the claimed base transceiver station from transferring the received uplink signal to said base station controller.

23. A base transceiver station as claimed in claim 22, wherein the assessment of said communications paths is carried out externally of the base transceiver station and the results of the assessment are communicated to the base transceiver station by one or more assessment signals, and said communications path disabling unit is operable to receive such assessment signals and to employ them to determine whether or not to effect said transfer of the received uplink signal to said base station controller.

24. A base transceiver station as claimed in claim 22, wherein the base transceiver station further includes:

a communications path assessment unit which carries out the assessment of the communications paths according to said one or more predetermined characteristics.

25. A base transceiver station as claimed in claim 22, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

26. A base transceiver station as claimed in claim 22, wherein said one or more predetermined characteristics include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

27. A communications method for use in a cellular mobile communications network that includes an array of base transceiver stations, each having a communications path connecting it to a base station controller of the network such that, when an uplink signal is received from a mobile station by a plurality of the base transceiver stations of the array, each of those base transceiver stations can transfer the received uplink signal via its said communications path to said base station controller;

in which communications method:

said communications paths are assessed according to one or more predetermined characteristics; and

5 based on the assessment of the communications paths at least one base transceiver station of said plurality is prevented from transferring the received uplink signal to the base station controller.

10 28. A communications method as claimed in claim 27, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

15 29. A communications method as claimed in claim 27, wherein said one or more predetermined characteristics include one or more of the following characteristics: congestion, availability, quality and cost of the communications paths.

30. A cellular mobile communications network including:

20 a base station controller;

an array of base transceiver stations, each having a communications path connecting it to said base station controller such that, when a downlink signal for transmission to a mobile station of the network is produced by said base station controller, that downlink signal can be transferred to a plurality of the base transceiver stations of said array via the respective said communications paths thereof;

25 a communications path assessment unit which assesses said communications paths according to one or more predetermined characteristics; and

30 a communications path disabling unit operable, based on the assessment of said communications paths, to prevent said base station controller from
35 transferring said downlink signal to at least one of said base transceiver stations of said plurality.

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31. A network as claimed in claim 30, wherein said communications path assessment unit is included in said base station controller.

5 32. A network as claimed in claim 30, wherein such a communications path assessment unit is included in each of said base transceiver stations of said plurality.

10 33. A network as claimed in claim 30, wherein said communications path assessment unit is included in said base station controller means and in at least one of said base transceiver stations of said plurality.

15 34. A network as claimed in claim 30, wherein at least one base transceiver station of said plurality has two or more communications paths available for connecting it to the base station controller, and the network further includes an available path selection unit operable, when said communications path disabling unit determines that said transfer between its base transceiver station and the base station controller is to be made, to select one of said available communications paths.

20 35. A network as claimed in claim 34, wherein said communications path assessment unit is operable to assess each of said available communications paths, and said available path selection unit makes the selection from amongst said available communications paths based on said assessment of those paths by said communications path assessment unit.

25 36. A network as claimed in claim 34, wherein said available path selection unit makes the selection from amongst said available communications paths based on an assessment of the signal to be transferred between the base transceiver station and the base station controller.

30 37. A network as claimed in claim 36, wherein said available path selection unit makes said selection based on a traffic type of the signal to be

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transferred.

38. A network as claimed claim 30, wherein said communications path assessment unit is operable to examine signals propagating through said communications paths and to employ the results of the examination to assess at least one of said predetermined characteristics of said communications paths.

39. A network as claimed in claim 30, wherein said communications path assessment unit is operable to receive control signals generated by a communications path controller serving to monitor said communications paths, which control signals represent one or more measures of the performance of those communications paths, and is also operable to employ the received control signals to assess at least one of said predetermined characteristics of said communications paths.

40. A network as claimed in claim 30, further including:

a mobile switching centre connected to said base station controller and operable to apply to the base station controller control signals representing one or more measures of the performance of said communications paths, said communications path assessment unit being operable to employ the received control signals to assess at least one of said predetermined characteristics of said communications paths.

41. A network as claimed in claim 30, wherein said communications path assessment unit includes a storage device for storing one or more measures of the performance of each of said communications paths.

42. A network as claimed in claim 30, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

43. A network as claimed in claim 30, wherein said one

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or more predetermined characteristics include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

5 44. A base station controller, for use in a cellular mobile communications network that includes an array of base transceiver stations, each having a communications path connecting it to the base station controller such that, when a downlink signal for transmission to a
10 mobile station of the network is produced by the base station controller, that signal can be transferred to a plurality of the base transceiver stations of the array via the respective said communications paths thereof, which base station controller includes:

15 a communications path disabling unit operable, based on an assessment of said communications paths according to one or more predetermined characteristics thereof, to prevent transfer of said downlink signal to at least one of said base transceiver stations of said
20 plurality.

45. A base station controller as claimed in claim 44, wherein said assessment of the communications paths is carried out externally of the base station controller and the results of the assessment are communicated to
25 the base station controller by one or more assessment signals, and said communications path disabling unit is operable to receive such assessment signals and to employ them to make the determination to prevent transfer of said downlink signal to at least one base
30 transceiver station of said plurality.

46. A base station controller as claimed in claim 44, further including:

35 a communications path assessment unit which carries out said assessment of said communications paths according to said one or more predetermined characteristics.

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47. A base station controller as claimed in claim 44, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

48. A base station controller as claimed in claim 44, wherein said one or more predetermined characteristics include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

49. A base transceiver station, for use in a cellular mobile communications network in which an array of base transceiver stations including the claimed base transceiver station are connected to a base station controller of the network by respective communications paths such that, when a downlink signal for transmission to a mobile station of the network is produced by the base station controller, that signal can be transferred to a plurality of the base transceiver stations of the array via the respective said transmission paths thereof;

the claimed base transceiver station including:

a communications path assessment unit which assesses said communications path according to one or more predetermined characteristics; and

an informing unit which generates assessment signals indicating the results of the assessment of the communications paths and which transmits such assessment signals to the base station controller means.

50. A base transceiver station as claimed in claim 49, wherein said base transceiver stations of said plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

51. A base transceiver station as claimed in claim 49,

wherein said one or more predetermined characteristics include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

5 52. A communications method for use in a cellular mobile communications network that includes an array of base transceiver stations, each having a communications path connecting it to a base station controller of the network such that, when a downlink signal for
10 transmission to a mobile station of the network is produced by the base station controller, that signal can be transferred to a plurality of the base transceiver stations of the array via the respective said communications paths thereof;

15 in which method:

said communications paths are assessed according to one or more predetermined characteristics thereof; and

20 based on the assessment of the communications paths, the base station controller is prevented from transferring said downlink signal to at least one of the base transceiver stations of said plurality.

53. A communications method as claimed in claim 52, wherein said base transceiver stations of said
25 plurality are base transceiver stations of said array involved in a soft hand-off operation with said mobile station.

54. A communications method as claimed in claim 52, wherein said one or more predetermined characteristics
30 include one or more of the following characteristics:

congestion, availability, quality and cost of the communications paths.

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